

CLAIMS

The embodiments of the invention in which an exclusive property or privilege is claimed are defined as follows:

1                   1.    A method of providing welding power  
2                   comprising:  
3                         sensing the status of a trigger between an on  
4                   position and an off position;  
5                         in the event the trigger is moved to the on  
6                   position, and wire is not being fed, performing at  
7                   least one of providing power to the weld and feeding  
8                   wire;  
9                         in the event the trigger is moved from the on  
10                   position to the off position within a predetermined  
11                   period of time after the trigger was moved to the on  
12                   position performing at least one of stopping the  
13                   providing of power to the weld and stopping the feeding  
14                   of wire;  
15                         in the event the trigger is moved from the on  
16                   position to the off position after a predetermined  
17                   period of time after the trigger was moved to the on  
18                   position, entering a latch condition by performing at  
19                   least one of continuing to provide power to the weld  
20                   and continuing feeding wire; and  
21                         when in the latch condition and, the trigger  
22                   is moved from the off position to the on position, or  
23                   from the off position to the on position and back to  
24                   the off position, leaving the latch condition by  
25                   performing at least one of stopping the providing of  
26                   power to the weld and stopping the feeding of wire.

1                   2.    The method of claim 1, wherein at least one  
2                   of stopping the providing of power to the weld and stopping

3 the feeding of wire includes both of stopping the providing  
4 of power to the weld and stopping the feeding of wire.

1 3. The method of claim 1, wherein stopping the  
2 providing of power to the weld includes opening a power  
3 contactor.

1 4. The method of claim 3, wherein at least one  
2 of stopping the providing of power to the weld and stopping  
3 the feeding of wire includes stopping the providing of power  
4 to the weld.

1 5. The method of claim 1, wherein at least one  
2 of stopping the providing of power to the weld and stopping  
3 the feeding of wire includes stopping the feeding of wire.

1 6. The method of claim 1, wherein the latch  
2 condition is left when welding current drops below a  
3 threshold.

1 7. The method of claim 1, wherein providing  
2 power to the weld includes closing a power contactor.

1 8. The method of claim 7, wherein at least one  
2 of providing power to the weld and feeding wire includes  
3 providing power to the weld.

1 9. The method of claim 1, wherein at least one  
2 of providing power to the weld and feeding wire includes  
3 feeding wire.

1 10. The method of claim 1, wherein the latch  
2 condition is entered after the predetermined period of time  
3 has past and when welding current is flowing.

1           11. The method of claim 1, wherein the  
2           predetermined period of time is user adjustable.

1           12. A welding system comprising:  
2           a source of power;  
3           a control means for controlling the system,  
4           including a trigger status means for indicating the  
5           position of a trigger in one of an on and off position,  
6           the controller further having at least one of a power  
7           control output means, connected to the source of power,  
8           for controlling an on and off status of the system, and  
9           a wire feeder control output means for controlling an  
10          on and off status of a wire feeder;

11          means for performing at least one of  
12          providing power to the weld and feeding wire in the  
13          event the trigger is moved to the on position, and wire  
14          is not being fed;

15          means for performing at least one of stopping  
16          the providing of power to the weld and stopping the  
17          feeding of wire in the event the trigger is moved from  
18          the on position to the off position within a  
19          predetermined period of time after the trigger was  
20          moved to the on position;

21          latch means for entering a latch condition by  
22          performing at least one of continuing to provide power  
23          to the weld and continuing feeding wire in the event  
24          the trigger is moved from the on position to the off  
25          position after a predetermined period of time after the  
26          trigger was moved to the on position; and

27          means for leaving the latch condition, by  
28          performing at least one of stopping the providing of  
29          power to the weld and stopping the feeding of wire,  
30          when in the latch condition and, the trigger is moved  
31          from the off position to the on position, or from the

32 off position to the on position and back to the off  
33 position.

1 13. The apparatus of claim 12, wherein the means  
2 for performing at least one of stopping the providing of  
3 power to the weld and stopping the feeding of wire includes  
4 means for stopping the providing of power to the weld and  
5 means for stopping the feeding of wire.

1 14. The apparatus of claim 12, including means  
2 for ending the latch condition when welding current drops  
3 below a threshold.

1 15. The method of claim 12, wherein the latch  
2 means includes means for entering the latch condition after  
3 the pre-determined period of time has past and when welding  
4 current is flowing.

1 16. The apparatus of claim 12, further including  
2 user setting means for adjusting the predetermined period of  
3 time, the user setting means being connected to the control  
4 means.

1 17. A welding system comprising a source of  
2 power and a controller, wherein the controller  
3 comprising:

4 a trigger input indicative of the status of a  
5 trigger between an on position and an off position,  
6 further including at least one of a wire feeder control  
7 output having an on and an off status and a power  
8 control output having an on and an off status;

9 a trigger on circuit having an on output  
10 responsive to the trigger moving to the on position,  
11 and connected to at least one of the wire feeder  
12 control output and the power control output;

13 a trigger off circuit having an off output  
14 responsive to the trigger moving from the on position  
15 to the off position within a predetermined period of  
16 time after the trigger was moved to the on position and  
17 connected to at least one of the wire feeder control  
18 output and the power control output;

19 a latch on circuit having a latch on output  
20 responsive to the trigger moving from the on position  
21 to the off position after a predetermined period of  
22 time after the trigger was moved to the on position,  
23 and connected to at least one of the wire feeder  
24 control output and the power control output;

25 a latch off circuit having a latch off output  
26 responsive to the latch on output and the trigger  
27 moving from the off position to the on position, or  
28 from the off position to the on position and back to  
29 the off position, and connected to at least one of the  
30 wire feeder control output and the power control  
31 output.

1 18. The apparatus of claim 17, wherein the latch  
2 off circuit is connected to the wire feeder control output  
3 and the power control output.

1 19. The apparatus of claim 17, wherein the power  
2 includes a contactor connected to the power control output.

1 20. The apparatus of claim 19 wherein the latch  
2 off circuit is connected to the power control output.

1 21. The apparatus of claim 17, wherein the latch  
2 off circuit is connected to the wire feeder control output.

1 22. The apparatus of claim 17,

2 wherein the latch condition is left when welding current  
3 drops below a threshold.

1 23. The apparatus of claim 17, wherein the latch  
2 on circuit is connected to the wire feeder control output  
3 and the power control output.

1 24. The apparatus of claim 19 wherein the latch  
2 on circuit is connected to the power control output.

1 25. The apparatus of claim 17, wherein the latch  
2 on circuit is connected to the wire feeder control output.

1 26. The apparatus of claim 17, wherein at least  
2 two of the latch on circuit; latch off circuit, trigger on  
3 circuit, and trigger off circuit form a single circuit.

1 27. The apparatus of claim 17, further  
2 comprising:

3 a welding system control panel connected to the  
4 controller;

5 a first user selectable input device, located on  
6 the control panel, and having an output indicative of a  
7 first user selected setting provided to the controller; and

8 a second user selectable input device located  
9 remotely from the control panel, and capable of selecting  
10 and providing to the controller an output indicative of a  
11 second user selected setting between a predetermined value  
12 and a value responsive to the first user selected setting.

1 28. The apparatus of claim 27 wherein the second  
2 user selectable input device is located on a welding torch.

1           29. The apparatus of claim 28 wherein the value  
2 responsive to the first user selected setting is the first  
3 user selected setting.

1           30. The apparatus of claim 29, wherein the system  
2 includes a wire feeder having a speed control input  
3 connected to and responsive to a speed control output on the  
4 controller, and wherein the first and second user selectable  
5 input devices are wire feed speed selectors.

1           31. The apparatus of claim 30, wherein the system  
2 includes a wire feeder having a speed control input  
3 connected to and responsive to a speed control output on the  
4 controller, and wherein the second user selected setting a  
5 range of from a minimum to the first user selected setting,  
6 and the speed control output is responsive to the second  
7 user selected setting.

1           32. The apparatus of claim 31 wherein the control  
2 panel is on the wire feeder.

1           33. The apparatus of claim 27 wherein the control  
2 panel is on the source of power.

1           34. The apparatus of claim 27 including a user  
2 selected run-in setting connected to the controller, wherein  
3 the user selected run-in setting has a range from a minimum  
4 to a maximum, and the maximum is dependent on the second  
5 user selected setting.

1           35. The apparatus of claim 34 wherein the maximum  
2 is the second user selected setting.

1           36. A welding system apparatus comprising:  
2 a source of power;

3 a first wire feed speed selector, located on  
4 a control panel, and having a first output indicative  
5 of a first wire feed speed;

6 a second wire feed speed selector, located  
7 remotely from the source of power, and having a second  
8 output indicative of a second wire feed speed between a  
9 first value responsive to the first wire feed speed and  
10 a second value;

11 a controller having a wire feed speed output  
12 connected to and responsive to the first and second  
13 outputs; and

14 a wire feeder having a speed control input  
15 that is connected to and responsive to the wire feed  
16 speed output.

1 37. The apparatus of claim 36 wherein the second  
2 wire feed speed selector is located on a welding torch.

1 38. The apparatus of claim 37 wherein the first  
2 value is the first wire feed speed.

1 39. The apparatus of claim 38 wherein the second  
2 value is responsive to the first wire feed speed.

1 40. The apparatus of claim 39 wherein the control  
2 panel is on the wire feeder.

1 41. The apparatus of claim 36 wherein the control  
2 panel is on the source of power.

1 42. The apparatus of claim 36 including a user  
2 selected run-in setting connected to the controller, wherein  
3 the user selected run-in setting has a range from a minimum  
4 to a maximum, and the maximum is dependent on the wire feed  
5 speed output.



1           43. The apparatus of claim 42 wherein the maximum  
2 is the wire feed speed output.

1           44. A welding system apparatus comprising:  
2           a source of power;  
3           a wire feed speed selector, located on a  
4 control panel, and having a first output indicative of  
5 a wire feed speed, and connected to the controller;  
6           a user selected run-in setting connected to  
7 the controller, wherein the user selected run-in  
8 setting has a second output with a range from a minimum  
9 to a maximum, and the maximum is dependent on the first  
10 output;  
11           a controller having a wire feed speed output  
12 connected to and responsive to the first and second  
13 outputs; and  
14           a wire feeder having a speed control input  
15 that is connected to and responsive to the wire feed  
16 speed output.

1           45. The apparatus of claim 44 wherein the maximum  
2 is the first output.